

Notice of Allowability

Application No.

09/427,238

Applicant(s)

KAPUR ET AL.

Examiner

Art Unit

Eduardo Garcia-Otero

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 8/16/2004.
2. ☒ The allowed claim(s) is/are 1-21.
3. ☒ The drawings filed on 6/14/2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

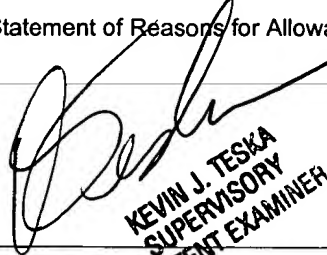
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER

REASONS FOR ALLOWANCE

Introduction

1. Title is: SYSTEM AND METHOD FOR DETERMINING CAPACITANCE FOR LARGE-SCALE INTEGRATED CIRCUITS
2. Applicant is: KAPUR et al.
3. US Application filed 10/26/99, no domestic or foreign priority claimed.
4. Claims 1-21 have been submitted, examined, and allowed. The independent claims are 1, 8, and 15.
5. This action is in response to amendment received 8/16/2004, drawings received 6/14/2004, and substitute specification received 2/6/04.

Index of Important Prior Art

6. **Belk** refers to Belk, US Patent 6,397,171 filed Apr. 1, 1999.
7. **Nabors** refers to PRECONDITIONED, ADAPTIVE, MULTIPOLE-ACCELERATED ITERATION METHODS FOR THREE-DIMENSIONAL FIRST-KIND INTEGRAL EQUATIONS OF POTENTIAL THEORY”, K. Nabors et al, Siam Journal on Scientific Computing, Vol. 15, No. 3, pp. 713-735, May 1994.
8. **Edgecombe** refers to Edgecombe et al., US Patent 6,345,235 filed
9. **Dufour** refers to Dufour, US Patent 6,351,572.
10. **“Large-Scale Capacitance Calculation”**, by Sharad Kapur and David E. Long, 2000 ACM.

REASONS

11. All prior rejections and objections are overcome by Applicant’s amendments.
12. In independent claim 1 limitation 1, Applicant states **“a charge variation function generator that creates a multidimensional charge variation function that is not directly dependent on a conductive geometry of said structure”**. Prior art discloses charge variation generators that are directly dependent upon a conductive geometry. However, claim 1 is not directly dependent upon a conductive geometry.
13. Applicant avoids the direct dependence (and thus avoids the prior art) by providing a representative (simplified) geometry for portions of the capacitive structure that are far away. Said representative geometry is claim 1 limitation 2 **“creates a representative conductive geometry... reduce a complexity...”**.

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14. Applicant clearly describes and enables claim 1 in the specification, and particularly in FIG 1A and FIG 1B. Note the complex geometry of element C3 in FIG 1A. Applicant generates a representative geometry in FIG 1B element C3'. Said representative geometry is much simpler than the original geometry, and thus reduces the complexity of the integral equation formulation of capacitance.
15. Also see Specification paragraph 27 which states **"the net C3 is located far enough away that the exact geometry of the net C3 is not critical. Therefore, were the net C3 to be replaced with a simpler geometric description, the number of unknowns could be reduced"**.
16. Reducing the complexity saves time and money in designing capacitive structures such as integrated circuits, and thus satisfies 35 USC 101.
17. All other claims are allowed for the same reasons as claim 1.

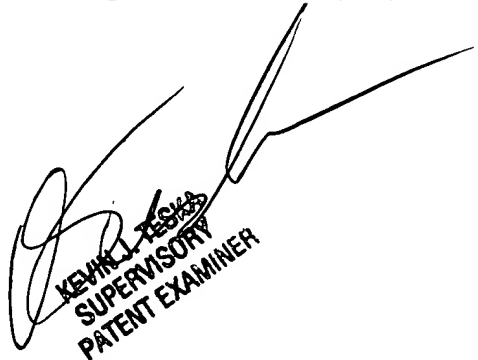
Conclusion

18. All pending claims are allowed.
19. All prior rejections and objections are withdrawn.

Communication

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eduardo Garcia-Otero whose telephone number is 703-305-0857. The examiner can normally be reached on Monday through Thursday from 9:00 AM to 8:00 PM. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska, can be reached at (703) 305-9704. The fax phone number for this group is 703-872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (703) 305-3900.

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KEVIN L. TESKA
SUPERVISORY
PATENT EXAMINER